

The Planters' Chronicle.

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THE U. P. A. S. I.

(INCORPORATED)

Contents.

The Scientific Officer prints a valuable article on Compost with tables of two samples. Valuable as the article is, it is still more valuable if read in conjunction with the discussion that took place at the Annual Meeting last year, when the subject of leaching took a prominent place. This is referred to in the extract immediately following the first article.

The Planting Expert has supplied us with an article drawing special attention to the very interesting paper written for us by Dr. Leslie Coleman, on the subject of Fertilization of Coffee. Though a digest, it assumes the value of an original article, and we hope to be favoured with more from his pen.

Then comes a valuable note on Scale on Tea, with the remedy for its extermination. Following this is an interesting note on various leguminous green dressings.

Our correspondence columns are taken up with some very interesting suggestions and information from Mr. King Church and Mr. Rogers, both of whose letters have received attention and replies from the Planting Expert in the present issue. We hope that others will be encouraged to write to us their suggestions and of their experiments.

For the next article on Fertilisation in Coffee we are indebted to Dr. Leslie Coleman, and should prove of engrossing interest to all coffee planters.

A table of the returns of Exports and Imports of Coffee is given to show the state of the market and prices.

We reproduce from the "India Rubber World" a paper read by Mr. Cyril E. S. Baxendale, at the Third International Rubber Conference at New York, on the Plantation Rubber Industry, which is a history of Rubber from its infancy to its present high position, and will prove not only interesting reading, but being in a compact form, will make a useful reference. We shall conclude the article in next week's issue.

Scientific Officer's Papers.

CXX.-COMPOSTS.

At the Annual Meeting of the U. P. A. S. I. in 1912 some work on the study of Coffee Pulp and Composts was reported (P. C., Vol. VII, p. 465). This work has been continued during the current year, and the following analyses show the composition of two composts made in the Bababudins at the time they were applied to the Coffee:—

	A		B	
	As received.	Ash.	As received.	Ash.
Moisture ...	8.40		6.98	
*Organic Matter ...	42.91		43.63	
(Silica ...	31.23	64.13	22.27	45.09
(Phosphoric Acid ...	2.55	5.23	2.87	5.94
Ash Potash ...	2.38	4.88	2.86	5.79
(Lime ...	3.11	6.39	2.92	5.91
(Other Mineral Matter ...	9.42	19.37	18.47	37.27
	100.00	100.00	100.00	100.00
*Containing Nitrogen ...	1.84		1.50	

The first (A) was composed of the following ingredients:—

	Rs.
2,000 bushels Cattle Manure costing	... 125
20 tons Whole Fish	... 1,554
16 cwt. Sulphate of Potash "	... 172
2½ tons Bone Meal "	... 225
Labour for making	... 16

Total Rs. ... 2,092

It was made by putting down first a layer of 180 bushel baskets Pulp, 9 bushels of Bone Meal, ½ bag of Sulphate Potash (½ cwt.), ½ ton of Fish, and 80 bushels of Cattle manure at the bottom of a pit. This was repeated till the pit was full, when it was allowed to rot down. It finally gave about 100 tons of Compost as applied and therefore cost about Rs.21 per ton. On its Nitrogen value alone, in terms of Castor Poonac containing 6% of Nitrogen and costing Rs.75 per ton, this compost is worth Rs.23 per ton, and if its Phosphoric Acid and Potash content are taken into account it is worth still more. Evidently there is a distinct profit in making the Compost, but it is really rather too expensive, and the same conclusion is arrived at as was formed last year, that the most profitable way of making a Compost, utilising pulp is to make it in connection with a cattle shed.

This was done in the case of the second sample (B). Here about 100 bushels of dry cherry husk were spread all over the floor of a cattle shed daily with two bushels of Bone Meal on the top. The Cattle were allowed to remain for the night in the shed, the dung and urine being well trampled

and mixed with this husk and bone in consequence. This process was repeated for 15 days, when the shed was cleaned out and the mixture placed in an open pit. This was done constantly till the pit was full. The final result was the use of—

3 tons of Bone Meal costing	...	...	Rs. 285
Labour making	...	...	" 20
Labour removing from shed to Pit	...	...	" 10
Total	...	...	Rs. 315

50 tons of Compost resulted at the end and thus cost about Rs.6—5 annas per ton.

The value of this Compost in terms of White Castor Poonac is Rs.18 12 annas. Hence there is a very large profit on the compost.

Composts made with ordinary pulp and lime sweepings in a covered pit are also being experimented with again and will be reported on in due course.

RUDOLPH. D. ANSTEAD, *Planting Expert.*

The following is taken from the *Indian Planters' Gazette* and read in conjunction with the above article by the Planting Expert will be read with interest by those who make composts.

The fertilising constituents nitrogen, phosphate of lime and potash, and, we may add, magnesia, behave differently under the influence of an excess of rain. Phosphate of lime is not liable to be washed down in the soil beyond the reach of plants, as it is retained by the soil particles in various combinations. Similarly with potash, it is present in a form which protects it from the danger of draining out of the soil. Fortunately, the soil possesses certain properties which enable it to retain the supplies of phosphoric acid and potash in the layers of earth to which the roots of the crops penetrate. We have not, therefore, to fear in times of excessive rain, that any supplies of these constituents placed in the soil in autumn or winter will be lost or seriously diminished in their fertilising value for the spring crops. It is, however, different with nitrogen. All cultivated crops, with the exception of those belonging to the family of the leguminosae, which are capable of drawing their supply direct from the atmosphere, assimilate their nitrogenous element in the shape of nitrates, which are formed in the soil, or introduced into it by manures such as nitrate of soda, sulphate of ammonia, etc. In order to become available for plant food the nitrogen of organic manures, such as farmyard manure, dried blood, hoofs and bone meal, bones, etc., must first be subjected to decomposition in the soil, which converts the organic substances to nitric acid by the process known as nitrification. Any agency which hinders this beneficent process acts injuriously on the fertility of the soil. Excess of moisture and a low temperature act in this way. When the soil is saturated with water the air cannot penetrate it, and nitrification is impeded; but the injurious effect of the combined rains and cold is not limited to this point, but is exercised in a still greater degree by washing down into the subsoil the nitrate which may have been formed, and thus depriving the crops of this valuable constituent. It is very necessary, after wet weather, to make good this loss of nitrogen by the application of a fresh available supply, and for this purpose a small quantity of a concentrated nitrogenous fertiliser is especially advantageous.

THE SCIENTIFIC DEPARTMENT, U.P.A.S.I.

Fertilisation of Coffee.—The article on this subject which appears in this issue is of very great interest, and our thanks are due to Dr. Coleman for so kindly translating Dr. vonFaber's paper from the Dutch, and sending us a digest of it. The fact that Liberian and *robusta* coffees have two strings to their bow, so to speak, as regards fertilisation is most interesting, and that cross fertilisation is preferred to self fertilisation and provision made by Nature that the former should supercede the latter, bears out the contention put forward before in these pages, that the plant benefits by cross fertilisation, and it is not unreasonable to suppose that the quality of the beans produced by this process may be better than that of beans which result from self fertilisation. As Dr. Coleman says, this paper suggests a most valuable line of research with Arabian coffee, and further papers of Dr. von Faber's will be looked forward to with pleasurable anticipation by all interested in coffee.

Scale on Tea.—Specimens of Tea branches attacked by "Brown Bug," *Lecanium hemisphaericum*, have been received recently from the Nilgiris. This scale is a well known pest of Coffee, and it was discovered on Tea in India in 1895 by Sir George Watt. Green says that in Ceylon this scale is only dangerous under shelter from rain, but in India it occurs in open fields with no shelter.

The scales are usually found on the under surface of the leaves and on the twigs and shoots. The female scale on becoming fixed in position, inserts the sucking apparatus with which its mouth parts are supplied into the leaf or stem and extracts the sap. The result is that the plant is impoverished and ceases to flush.

The full grown scale is nearly spherical, of a pale chestnut brown colour and rather polished. When younger it appears as an oval scale with a marked longitudinal and two transverse ridges. The young larvae are active pale yellow insects which are capable of moving rapidly.

The remedy is to spray the affected bushes with Kerosine Emulsion. If the bushes are very badly attacked, it is advisable to prune them and burn all the prunings and then spray the new growth, if it again shows signs of the scale, the object being to prevent the spread of the pest by larvae being carried by wind to new areas.

Leguminous Green Dressings.—Experiments with different kinds of indigenous leguminous plants considered suitable for green dressings, are being conducted on several estates. A planter in South Mysore who has for many years been very interested in this subject and who has a large number of different green dressing plants under trial writes that *Tephrosia tinctoria* is the most easily established in his particular district. This is a very useful plant in Ceara Rubber and Tea. An analysis of it will be found in the *Chronicle* (Vol. VI. p. 542) and also an account of its use in Tea (Vol. V. p. 488). Next to this, *Cassia mimosoides* is good. The variety which grows in Mysore is a more upright plant with a looser growth than that found in the Nilgiris where it forms a mat, growing close to the ground. This is probably due to the difference in climate and elevation. The Mysore variety is probably the variety *Wallichiana* of Hooker's 'Flora of India.' My correspondent says he has carpets of it in his Ceara Rubber. He is also cultivating *Desmodium polycarpum* and leaving *Desmodium triflorum* wherever it appears though not keen on it. A number of others are on trial in the nursery and field, and will be reported upon from time to time.

R. D. A

CORRESPONDENCE.

Tellicherry, 11th July, 1913.

Green Bug.

The Editor,

Planters' Chronicle.

Bangalore.

Dear Sir,—I have read with interest the articles and correspondence in your recent issues on the regrettable outbreak of Green Bug on some Estates in Mysore and Coorg.

Many and various theories are put forward to explain the presence of the pest in regions hitherto free from the affliction, but judging from the Scientific Officer's paper in your issue of the 21st June last, and from correspondence I have had with planters on the subject, a general consensus of opinion points to manure bags as at any rate one source of infection and the Scientific Officer is of opinion that they become so infected on the cart journey up to the Estates.

As a preventative against this specific source of infection in future, I venture to suggest that all bags of manure after being packed, might be thoroughly brushed over with a solution of such a nature as would render them unsuitable as a habitation to the Green Bug in course of transport.

The pest is of so dangerous a character, that I feel sure all parties interested in the coffee industry of Southern India, would willingly co-operate in any scheme calculated to ensure safety in the future from what at any rate appears to be one recognised source of infection.

Would the Scientific Officer kindly give his opinion as to whether the suggestion put forward would be effective, and if so, what would be the solution best suited for the purpose which, whilst being deadly to the Green Bug, would be harmless to the manure contained in the bags.

I may say in conclusion, that for my part, I should be prepared to treat every bag of manure as suggested before loading into carts to be taken up to the Estates.

(Signed) L. KING CHURCH,

Managing Partner.

Pullicoon Coffee Works Co.

Adderley Estate,
Coomoor, P. O., Nilgiris,
16th July, 1913.

TO THE EDITOR,

Planters' Chronicle.

Dear Sir,—I have read with interest the recent correspondence on Green Bug.

I have been treating trees for Bng for some time, and have given both the spraying and brushing methods close personal attention. When I com-

mented I had 350 acres more or less affected, and the conclusion I have come to is, that brushing is the only method that can be relied on to thoroughly eradicate the pest.

I have half a dozen "Four Oaks" sprayers and now only make use of these as follows: for spraying large trees bearing a heavy crop, and on any new patches of bug, where one spraying is given to check the bug until brushing coolies are available to go through and thoroughly treat each tree.

Up till quite recently I have used the sprayers without following up with brushing coolies, and I will give you the particulars of two fields treated this year, one with spraying, one with brushing.

In February last, I brushed a field of 5,000 trees at a cost of Rs.23 per 1,000 at the same time I sprayed a field of 2,000 trees at a cost of Rs.20.80 per 1,000 trees, these rates include labour and material. The latter field I sprayed again in May at about the same cost, and now I notice bug re-appearing on the ends of branches.

The field which was brushed in February, received no further treatment. Last week it was handled throughout, and after carefully examining the trees I could not find sufficient bug to give 10 coolies a day's work.

The mixture I use is as follows:— $\frac{1}{2}$ lb. soap, 6 oz. rosin, 6 oz. refined saltpetre to 4 gallons water. In wet weather, I increase the quantity of rosin. The soap enables coolies to work up the mixture with a fairly firm froth, this sticks well to the leaves, and when dry, they have a decidedly whitish appearance. The advantage of this lies in the fact that a branch or leaf missed is very easily detected.

* Brushes I make of good coir fibre, about 4 ins. thick and 6 ins. long. These do no damage at all to the foliage or crop and cost very little more than one anna each.

I would draw attention to the importance of first destroying any ants nests that may be found.

I always have a separate gang working just ahead of the brushes searching for and destroying ants' nests.

In conclusion I would remark that bug has been eradicated from all parts of the estate where I have been able to get at all the ants' nests, and I believe this is possible anywhere, providing the coffee has clean shade.

Yours faithfully,

(Signed) L. A. GERRARD ROGERS.

No. 585/1913.

Office of the Planting Expert,
Bangalore,
17th July 1913.

The EDITOR,
Planters' Chronicle.

Dear Sir,—The question of treating manure bags raised by Mr. King Church has been submitted to the Government Entomologist who has very kindly given his opinion. He writes, "a light spraying of the bags with rosin wash, crude oil emulsion, or any similar insecticide on arrival at the estate should be all that is required. I do not think, however, that you will keep out scale even if you fumigated the bags. The young are small and active and are doubtless carried by all sorts of methods; foot passengers, possibly birds, &c."

The idea of treating the bags so that young scales falling on them would be killed, does not seem possible, but it would certainly be advisable in future for planters to spray bags on arrival.

Yours faithfully,
(Signed) RUDOLPH D. ANSTEAD,
Planting Expert.

No. 590/1913.

Office of the Planting Expert,
Bangalore,
18th July 1913.

The EDITOR,
The Planters' Chronicle.

Dear Sir,—I am glad to see that your correspondence columns are eliciting so much valuable information about 'brushing *versus* spraying.'

I should be much obliged if Mr. Rogers would kindly inform us, firstly how many coolies he has brushing, and secondly how many trees they do per day on the average. I am quite aware that this depends upon the virulence of the attack of bug, but I want to know how many are done a day in the case of an ordinary average attack. This is important when dealing with estates and districts short of labour.

I find that on an estate in Coorg 300 to 350 trees a day can be sprayed lightly and 150 to 200 thoroughly by one cooly, and the cost is working out at 2/8 to 3 rupees per acre for two sprayings.

While on the subject I may mention that the Government Entomologist has called my attention to the fact that monohydrated sodium carbonate may be used with advantage instead of washing soda and only half the quantity is needed, washing soda containing ten molecules of water of crystallisation. I find that this monohydrated soda is sold under the trade name of 'Soda Ash' and I have recently had a sample of this in my hands. It cost a rupee a hundred weight less than washing soda and half the quantity is required.

Yours faithfully,
(Signed) RUDOLPH D. ANSTEAD,
Planting Expert.

COFFEE.

Fertilization in Coffee.

With reference to the question of the cross fertilization of the coffee flower, a subject which has received considerable attention in the "Planters' Chronicle," it will, I believe, be of interest to give a short resumé, of some work that has been done on this question in Java.

In 1910, my friend Dr. F. C. von Faber published in Dutch some notes on the Biology of the Coffee Flower in which he gives the results of experiments performed by him on fertilization. He experimented with Liberia coffee and under Javanese conditions so that these results cannot be taken directly as applying to South India. They however suggest a line of investigation which might, perhaps, be profitably followed here in studying the question of the importance of cross fertilization.

Dr. von Faber first examined the question of pollination and found that out of 78 flowers of Liberia coffee examined, in all but 8 self-pollination had occurred in the bud before the flowers opened; moreover the pollen grains had in many cases, already germinated at the time of opening of the flower and the pollen tubes had begun to grow down through tissues of the style towards the ovaries.

From this result one might be tempted to conclude that, in the case of Liberia coffee, cross fertilisation can occur in so few cases as to be quite negligible. This is, however, not the case, as, on further investigation, Dr. von Faber found that, where pollen from other flowers on the same plant or from other plants found its way to the stigma and germinated, it grew about twice as fast as the pollen from the same flower. There thus occurs a sort of race between the foreign and the "self" pollen tubes as to which shall fertilize the ovaries and the results depend entirely upon how early the foreign pollen reaches the stigma.

Dr. von Faber has also some remarks to make on the rôle of insects in the fertilization of Liberia Coffee flowers. He states that, although the number of insects in a coffee plantation is usually small in comparison with the number of trees, this is to a certain extent requanzed by the rapidity of insect movement, whereby a large number of flowers are visited in a very short time. Bees seem to have been among the most prominent insects observed by him. The following observations made by him are of interest.

6th April.—Tree No. 8—At 8 a.m. 48 flowers found open; within 15 minutes, 32 of these were visited by insects.

25th April.—Tree No. 7a—At 8 a.m. 72 flowers found open; within 25 minutes, 48 of these were visited by insects.

14th May.—Tree No. 15—At 8-30 a.m. 64 flowers found open; within 45 minutes, 52 of these were visited by insects.

14th May.—Tree No. 18b—At 10-30 a.m. 38 flowers found open; within 15 minutes, 24 of them were visited by insects.

The visiting insects were, in each case, examined and were found invariably to be covered with pollen.

The paper under reference also contains an account of observations on the *robusta* varieties of coffee, where it was found that self-fertilization in the bud rarely takes place. The author found here also that foreign pollen grains grow more rapidly down through the tissues of the style than do the "self" grains.

With regard to Liberia coffee the author concludes that cross fertilization was the original method and that self-fertilization has arisen later to guard against failure in fertilization.

As far as I am aware, no similar studies have been made on *Coffea arabica* either in India or elsewhere and it would, I believe, be a matter of considerable practical interest to ascertain whether a difference in the rate of growth of foreign and "self" pollen grains exists here similar to that described by von Faber for Liberia coffee in Java.

The paper under review is a preliminary one, and I hope to receive soon from Dr. von Faber a paper dealing with the subject of the fertilization of coffee in a more extensive manner. Any further facts of general interest will be communicated to the *Planters' Chronicle*.

(Signed) LESLIE COLEMAN,
Director of Agriculture, Mysore.

COFFEE.

The terminal market has been very unsettled, and after sharply advancing 1s. 6d. per cwt. a considerable amount of selling from abroad sent prices down again. A larger business than usual has been done and closing prices show a decline of 2s. 3d. per cwt. from the highest point of the week. Until yesterday the pressure did not apparently come from Brazil, but heavier daily receipts produced weakness, and lower offers were made. Quotations are now much lower than the principal operators had expected, and the general opinion is that the fall has been overdone, and is mainly due to the financial difficulties in markets abroad other than Coffee. The fall has certainly given more confidence, and a fairly large business has been done at the lower rates. Unless the new crop is hurried forward more rapidly than usual an advance seems probable, as dealers are generally short of stock. Mild descriptions have been almost entirely neglected, and to effect sales importers have had to accept a reduction of 1s. to 2s. but in many cases they have preferred to withhold their offerings, so that quotations are not in all cases much lower.

LONDON COFFEE RETURNS.

	Home		Export.		Stock.	
	Consumption.					
	1913.	1912.	1913.	1912.	1913	1912.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
For week ended June 7	... 298	241	652	5	16,409	13,667
For 23 weeks ended June 7	...7,277	7,289	8,371	8,297	—	—

OFFICIAL STATISTICS OF THE COFFEE TRADE OF THE UNITED KINGDOM.

		1 month ended May 31.			5 months ended May 31.		
		1911.	1912	1913.	1911.	1912.	1913.
Imports	...cwt.	50,159	66,655	72,440	419,338	420,704	476
Home Consumption	...cwt.	31,436	24,157	32,750	114,853	119,672	120
Exports	...cwt.	217,098	37,359	45,484	369,832	203,422	171
Total Deliveries.	cwt.	248,534	61,516	78,234	484,685	323,094	291
Stock on May 31.	cwt.	380,000	313,000	346,000	—	—	—

—*The Produce Markets' Review.*

RUBBER.

The Plantation Rubber Industry.

by

CYRIL E. S. BAKENDALE.

A Paper Read at the Third International Rubber Conference, held in New York, 1912.

EARLY HISTORY.

It is remarkable that—as civilization has become dependent on cultivated produce—the profitable cultivation of rubber should have been, for years, open to doubt.

It was in 1876 (not less than 36 years ago) that *Hevea* seeds were brought from Brazil to Europe by that prince of smugglers Mr. H. A. Wickham. There was an earlier attempt, but as the few seedlings raised all died, we need not waste time over that. From the 70,000 seeds collected in Brazil by Mr. Wickham, 2,800 plants were raised at Kew Gardens (London) and, in the same year, shipped to the Peradeniya Gardens of Ceylon (Ridley tells us) as a depot for the plants from which the cultivation might be spread all over those British Colonies wherein the plant could thrive.

In 1877, a case of 22 plants reached Singapore and were successfully planted by Mr. Murton, the then curator of the newly founded Botanic Gardens there. The same year the first *Hevea* trees arrived in the Malay States. Two cases were sent from Ceylon to the late Sir Hugh Low (British Resident of Perak) who planted them at Kwala Kangsar, and, I am glad to say, he lived long enough to see something of the great success of the industry that he helped to found.

It may seem strange that these trees reached maturity many years before it was realized that they were capable of yielding a sufficient quantity of rubber to make their regular tapping profitable. The only explanation I can offer for this is that the duty of tapping them was relegated to Sakaïs (Malayan Aborigines), who adopted the same method they applied to the collection of wild rubber; that is to say, they hacked them with choppers, while the results they achieved were insufficient to tempt any capitalist to put ten cents into the business.

It is to our scientist friends that we owe the primary these trees might be made profitable. On what we now consider to have been a red-letter day in the year 1888, Mr. H. N. Ridley was appointed Director of the Botanic Gardens in Singapore and very soon afterwards commenced experimental tapping: but it was not until 1891 that the first sample of plantation Para was sent to London from Malaya and was favorably reported upon by experts. During the nineties, several gentlemen in Ceylon, and Mr. Derry and my learned colleague, Mr. Leonard Wray, in Malaya, continued the experiments.

The first actual sale recorded from Malaya was in 1899, from the trees planted by Sir Hugh Low, and realised 3s. 10d. a pound. The trees were then 22 years old. To the brothers Kindersley belongs the honor of first planting rubber on a commercial scale in our country. That was in 1895, and within three years the late Mr. W. W. Bailey and several other planters, including the humble individual now addressing you, had summoned up sufficient courage to plant a few hundred acres amongst them. To attribute this slow development to lack of enterprise would be unjust. If any explanation is required, it must be attributed to lack of money. At the time of which I am speaking, we were all coffee or sugar planters, struggling for a

bare, very bare, existence. Some of us may have had the privilege of being on terms of a nodding acquaintance with men of means, but not many of those could recollect that rubber was useful for any practical purpose, except for the erasure of pencil marks.

A favored few had seen or heard of a Mr. Charles Rolls, travelling in a horseless carriage preceded by an ancient man on foot, carrying a red flag as a danger signal; but, probably, none of these realised that this object of merriment was the forerunner of the greatest mechanical industry of the age, or if they did, would not, at any rate, have found it a reason for supporting the schemes of would-be rubber planters.

Rumours of remarkable results from the first planted *Hevea* trees of Ceylon and Malaya reached Europe, and as the years rolled on, a few speculative—or may I call them, far-sighted—persons staked a portion of their savings on the new venture.

The extension of the area under *Hevea* in Malaya, which in 1905 amounted to about 38,000 acres, increased at an average rate from that year of about 70,000 acres per annum. The total area at the end of last year (1911) was 542,877 acres.

THE BOOM.

During 1809, the income from the older companies attracted the attention of the investing and speculating public of Europe in general—and Britain in particular—as being unusually large for an agricultural industry. At the same time the value of crude rubber went up by leaps and bounds, bewildering even to those in it. Speculation was indulged in, of which the promoter of many a wild-cat proposition took full advantage.

It is said that the boom far exceeded that which heralded railway development 70 years ago and can only be compared with another that occurred in the reign of our late Queen Anne in connection with a venture known as the South Sea Bubble.

Well, *our* Bubble, has since deflated somewhat, I am glad to say, but it has not burst; and I think it may be said that the planters who had borne the burden and heat of the day generally kept their heads in spite of the somewhat embarrassing attention paid to their humble efforts, and this had much to do with steadying the market when the bubble was soaring, and also in stopping total deflation when investors rushed to the other extreme.

CLIMATIC CONDITIONS.

The reason the Malay Peninsula attracted most attention for this purpose was, primarily, its regular rainfall. It is commonly said that there are two seasons in that country. One is the wet, and the other is the d—d wet season.

This peculiarity is due to its unique situation as the meeting place of N-E Monsoon of the China Sea and the S-W Monsoon of the Indian Ocean. After the subsiding of the rains of the S-W Monsoon, the N-E commences and as the width of the Malay Peninsula does not exceed 170 miles in any part, the land on both coasts is affected by either monsoon.

I have kept the rainfall records at Jugra for 11 years and have never experienced a month without rain, and rarely a month below the average rainfall of Britain. It must be admitted that some of us, in cabling particulars of our monthly outputs, explain a shortage against the estimate by adding "owing to the drought"; but the truth is, we have yet to experience the true meaning of the word "drought." There are very few days in the year when it is too wet to work, and this, of course, gives us a great advantage over the collector of wild rubber on the Amazon, where I understand there can be no tapping for several months of the year.

HEALTH.

A very considerable change has come over the conditions of life in Malaya. I regret to say that many of the plantations can hardly yet be described as health resorts; but there has been an immense improvement, and in view of the more or less recent discoveries of our medical men, there is good reason to hope that the improvement will continue. To Sir Patrick Manson and Professor Ross we owe the original discovery that the *Anopheles* mosquito is the principal, if not the only, carrier of malarial infection, and the doctors of Malaya have amongst them done excellent work as a result of this discovery. I would single out Dr. Malcolm Watson for special mention, as his work as medical adviser to plantations has come particularly, under my notice.

He has discovered that the variety of *Anopheles* which favours the coast districts, rarely, if ever, travels more than one-half a mile from the jungle, and there is practical immunity in dwelling places at this distance.

The valleys, in some of the inland districts, harbor another variety of the *Anopheles*, the spawn of which can exist in running water, and can only be got rid of by carrying the water away in enclosed drains. Interesting experiments in this direction are now being carried out by several rubber companies in Selangor.

Thanks to the natural richness of the soil, a considerable amount of capital was attracted to British Malaya from Ceylon, where there was comparatively little suitable land available, and our community owes some thing of its success to the cash and experience introduced from that colony.

GOVERNMENT AND PLANTER.

Although the new applications for land are still sufficient to tax severely the resources of our over-worked (and not over-paid) Survey Department, the increased rent and export duty has driven a certain amount of British capital to the Dutch Colonies of Java and Sumatra, and considerable development has recently been made in those islands, as well as in Borneo.

When stating these facts, I do not wish it to be understood that I am advocating the avoidance of British Malaya as country for investment, or that I would belittle the fine work accomplished by my fellow countrymen who have been officially responsible for the development of that region.

On this occasion, I have the honor to represent the Planters' Association of Malaya, who amongst them manage a total of upwards of 600 plantations, with an invested capital of about fifty million pounds sterling, a value, which through their efforts, has appreciated to several times that amount. I am quite certain that I should not be correctly voicing that community if I conveyed the impression that we would prefer any form of Government than that approved by our Sovereign Lord, King George.

The success of our industry is largely due to the confidence inspired by the existence of an absolutely honest and conscientious public service. Mistakes have been made, but these have been due, entirely, to the excessive zeal of those in authority, who desire that the whole country should participate in the prosperity of our industry; and judging by past experience in times of adversity, we may reasonably expect that if our burdens become too grievous to be borne, we shall obtain the relief necessary to meet the stress of competition.—*The India Rubber World*.

(To be continued.)